

Parachute Mishaps Analysis

Introduction

There is not enough analysis on parachute mishaps to lead to specific causes that could be used to target problem areas. This report attempts to target particular areas associated with mishaps of varying severity.

- Is there an increasing trend of parachute mishaps?
- Has there been any significant change in parachute mishaps?
- What commands have the most parachute mishaps?
- What are the causal factors of parachute mishaps?

Data

Navy Parachute data from FY98-FY08 as of 27 May 2008 populates the graphs in this report. The mishaps include Class A, B and C event severities and are distinguished in charts as appropriate. The casual factors were determined using the narratives for each mishap with assistance from Mr. Schroy from Code 44.

Team

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Code 62 – Team provided requested data.

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Methodology

After obtaining data during the ten year timeframe, the parachute mishap data could be manipulated to produce answers to the questions in the Introduction section. To answer the question of whether a parachute mishap is statistically significant, confidence intervals at the 90% significance level were used.

Discussion

The chart in Figure 1 shows each year's parachute mishap totals with colors distinguishing the mishap class. Figure 1 illustrates the lack of trend parachute mishaps have from FY98-FY08. There were two years, FY02 and FY03 where there were no mishaps. The only two years that are statistically significantly different than the other years at the 90% significance level are FY98 and FY05. While these two years had large mishap numbers compared to the other fiscal years, neither of these years had Class A mishaps. Before FY08, there has not been a parachute Class A mishap since FY01. The two Class A mishaps from FY08 beg the question, "are the two FY08 Class A mishaps significant?" Figure 2 graphically answers this question.

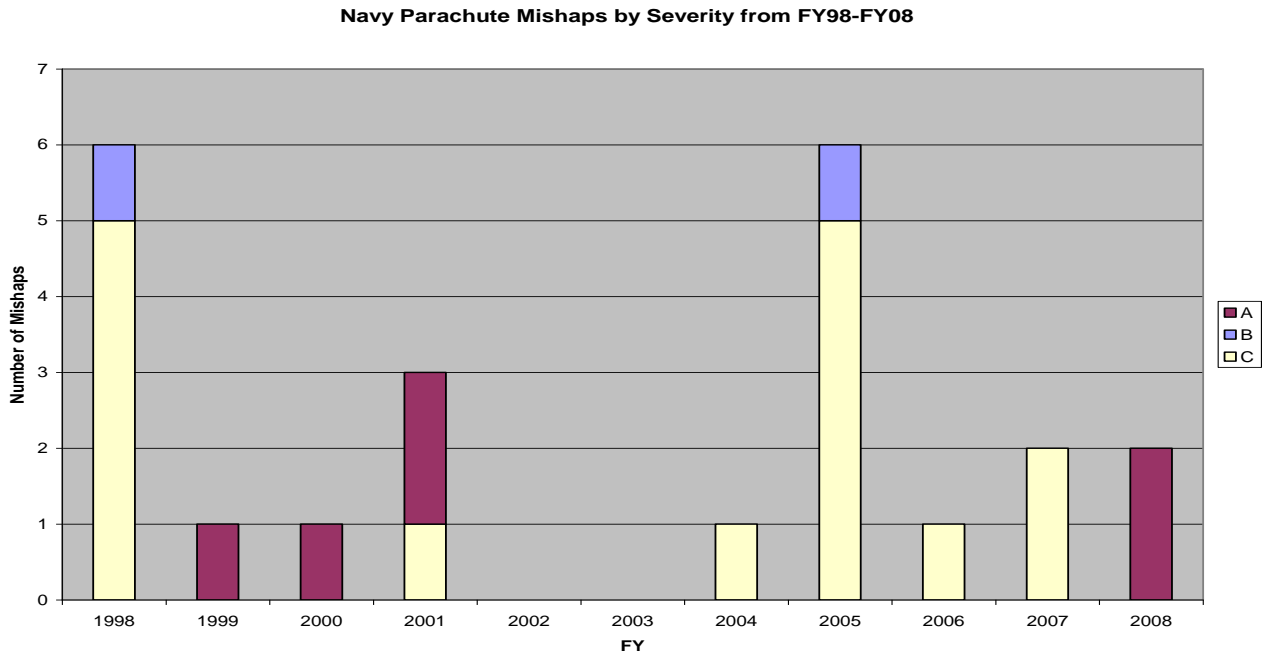


Figure 1

Figure 2, 3, 4 and 5 use the same methodology for total mishaps, Class A, B and C mishaps respectively. Figure 2 shows the average from FY03-FY07 for total parachute mishaps. FY08 currently has two mishaps but is statistically significantly no different than the 5-year average shown in Figure 2 since the number of mishaps fall within the 90% confidence interval.

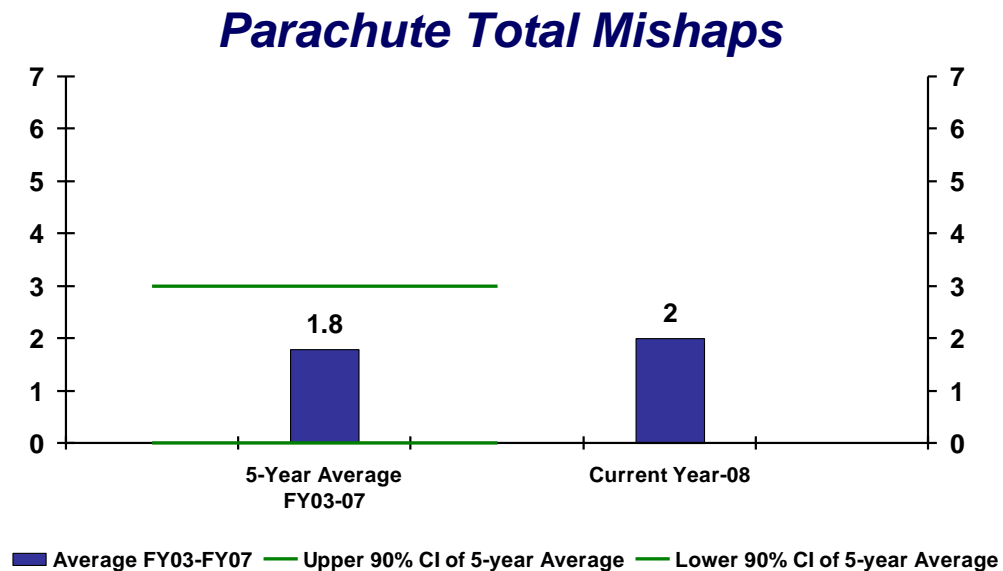


Figure 2

Since the average for Class A mishaps from FY03 to FY07 is zero, the confidence interval with 90% significance level represented in Figure 3 with green lines is less visible. The number of Class A mishaps for FY08 is above the 90% confidence interval of the 5-year average and thus the FY08 Class A mishaps are significantly different than the 5-year average from FY03-FY07.

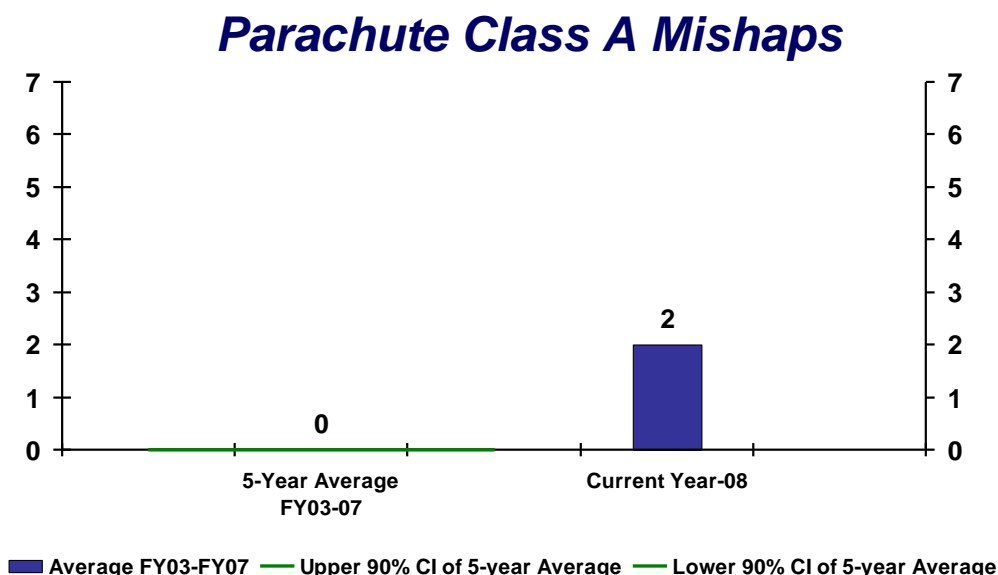


Figure 3

The Figures 4 and 5 for Class B and C mishaps have more visible green lines representing the 90% confidence interval of each 5-year average. Figure 4 shows FY08 having zero Class B mishaps as of May 2008. Compared to the 5-year average however, the FY08 figure is in between the 5-year average 90% confidence interval and therefore, statistically no different.

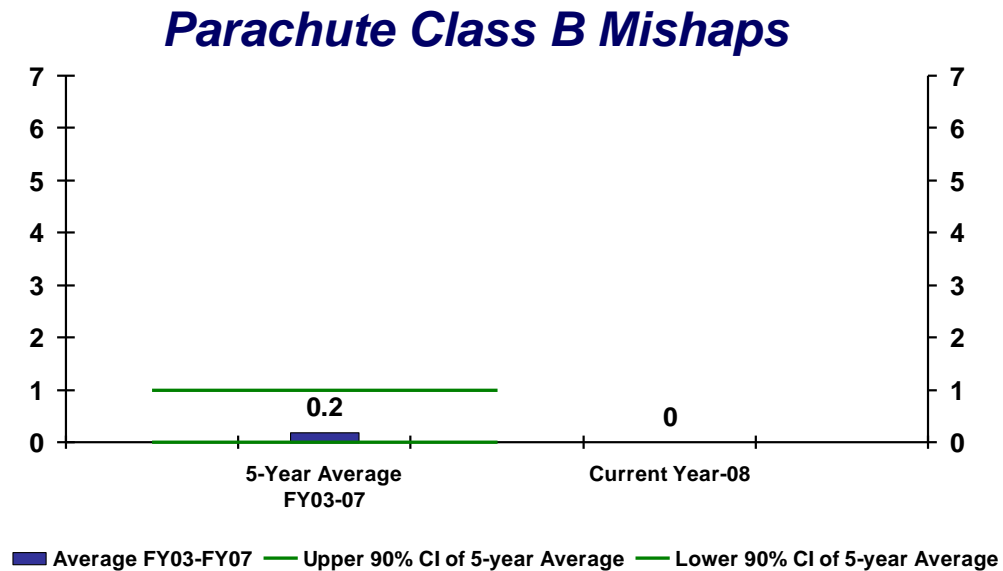


Figure 4

Class C mishaps shown in Figure 5 also are zero for FY08 as of May 2008. As the case in Figure 4 however, since this value is between the 90% confidence interval for the 5-year average covering FY03-FY07, the values for FY08 are statistically no different than the average for Class C parachute mishaps.

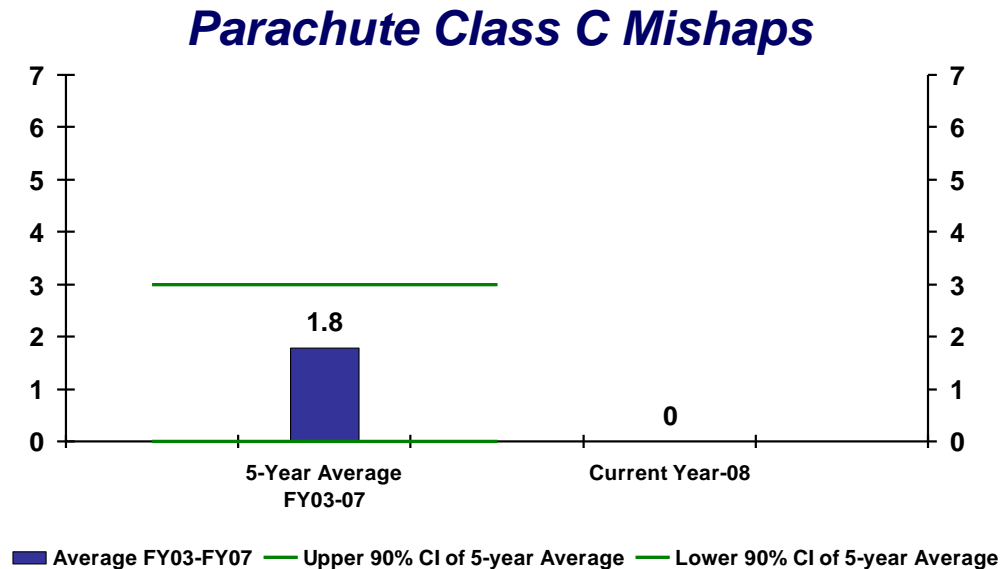


Figure 5

The total mishaps in Figure 6 are categorized by command showing which commands from FY98-FY08 own the most mishaps. During this time period, the Naval Special Warfare Development Group and the Explosive Ordnance Disposal and Training Evaluation Unit 2 commands own the most parachute mishaps. The Naval Special Warfare Development Group owns the most Class A and C parachute mishaps. While these two commands have a greater quantity of mishaps, other commands such as Naval Air Warfare CEN WPN DIV China Lake have had more fatalities than Explosive Ordnance Disposal and Training Evaluation Unit 2. There are four of thirteen commands from FY98-FY08 that have had at least one Class A mishap.

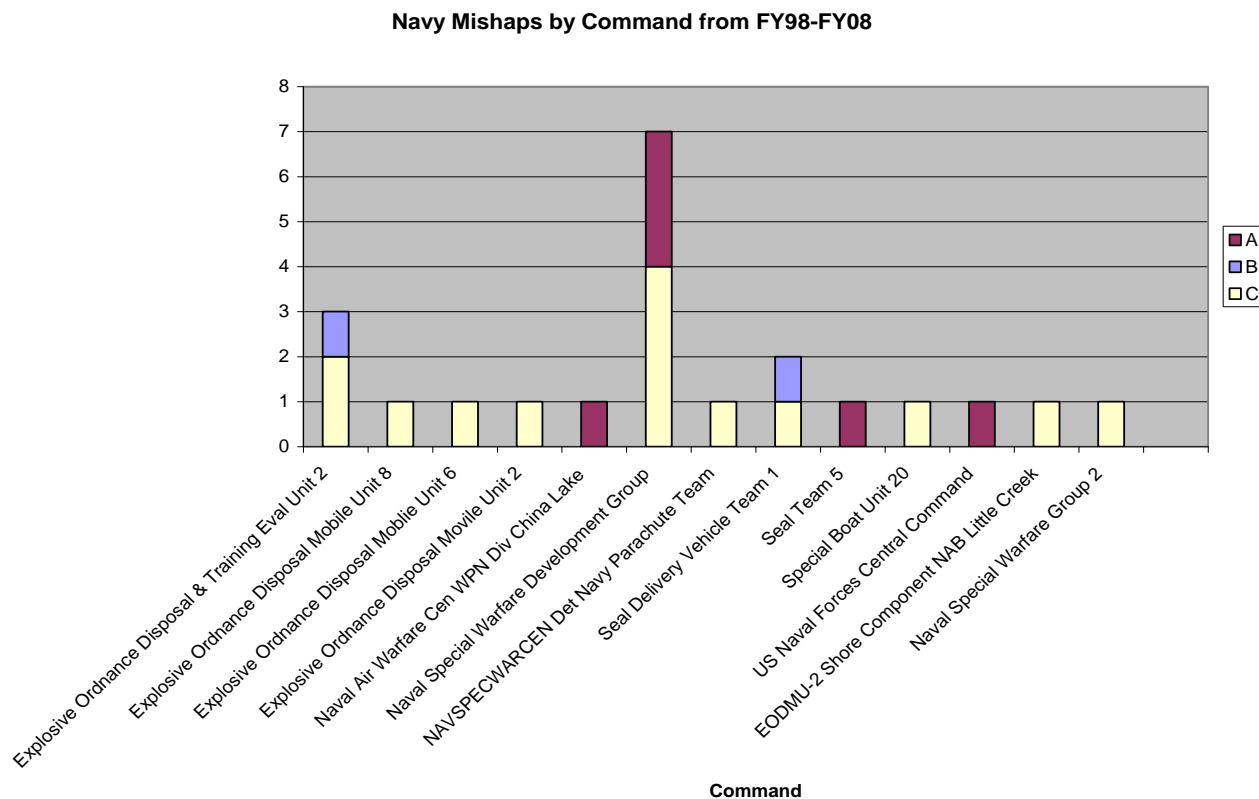


Figure 6

The casual factors of Navy parachute mishaps graphed in Figure 7 show the mishaps involving procedure errors as the most involved factor. Failing to follow procedures has caused a mishap of every class. The second leading factor, parachute landing fall (PLF) error has the second most number of mishaps, and all its mishaps are Class C mishaps. The PLF error casual factor is less deadly however, than for example the rigger error that caused one mishap that was a Class A mishap. The most illuminating piece about this chart reveals the lethality of parachute errors. Figure 7 shows five of the nine casual factors have caused at least one fatality.

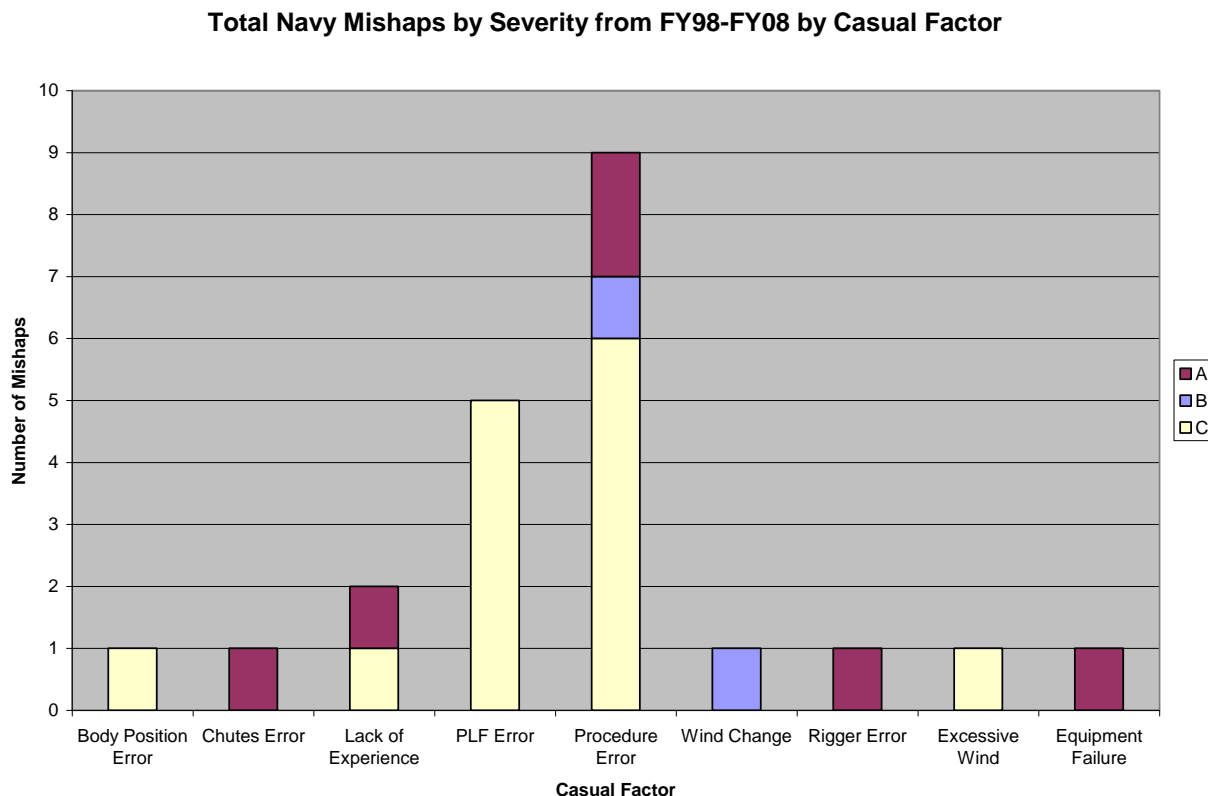


Figure 7

Conclusions / Recommendations –

During FY98-FY08, the number of Navy Parachute Mishaps greatly varies as shown in Figure 1, resulting in no clear trends. One important piece, related to yearly average of parachute mishaps revealed in Figure 3 that the current FY08 Class A mishaps are statistically significantly different than the respective 5-year average at the 90% significance level. While the overall number of mishaps shown in Figure 2 is no different than the combined yearly average of mishaps statistically, this current year has been significantly deadlier than the 5-year average with 90% confidence. In future work, recommend matching commands with the causal factors in attempt to provide the appropriate course of action to the respective command.